

## TITLE OF THE INVENTION

[0001]

Combination Umbrella and Fan

## CROSS REFERENCE TO RELATED APPLICATION

- 5 [0002] This application claims the benefit of U.S. Provisional Patent Application No. 60/424,044, filed November 5, 2002 and entitled "Combination Umbrella and Fan", the entire contents of which are incorporated herein by reference.

## BACKGROUND OF THE INVENTION

- 10 [0003] The present invention relates generally to umbrellas and, more particularly, to an umbrella which has incorporated therein a fan or other air moving device to provide a flow of cooling air onto a person using the umbrella or to vent air from beneath the umbrella.
- [0004] Umbrellas which may be used for protecting users from weather elements such as rain, snow and the like, or for providing shade to users are generally well known. Typically, the
- 15 protective upper surface or cover of an umbrella is generally curved and circular and includes a central portion which is generally higher, when the umbrella is in use, than the peripheral or circumferential outer edges of the protective surface. This arrangement is typically employed to permit rain, snow or the like, from accumulating on the protective surface of the umbrella. While having such an arrangement is beneficial to avoid a build-up of rain, snow or the like on the
- 20 protective surface, the shape of the protective surface tends to inhibit the flow of fresh air to the undersurface of the umbrella. As a result, warm or stale air is often trapped within the undersurface of the umbrella resulting in discomfort to a user whose head may be positioned within or near the area where the warm, stale air is trapped. The present invention overcomes the problems associated with prior art umbrellas by providing a fan or other air moving device to provide a flow of cooling
- 25 air directed into the undersurface of the umbrella to thereby preclude a build-up of hot, stale air within the umbrella and to provide a flow of cooling air onto or near the head of a user of the umbrella. The present invention also functions to vent hot, stale air from the umbrella.

## BRIEF SUMMARY OF THE INVENTION

- 30 [0005] Briefly stated, the present invention comprises a combination umbrella and fan for providing improved comfort to a user. The combination includes a centrally located support rod

having upper and lower ends with a fan housing secured proximate to the upper end of the support rod. The fan housing includes a lower end having a plurality of open slots extending therethrough. The fan housing further includes a plurality of openings extending therethrough proximate an upper end. An electrically powered fan motor is provided, the fan motor having an output shaft secured to a propeller which is located within the fan housing. The fan motor is reversible for rotating the propeller in first and second directions. A power supply provides electrical power to the fan motor, the power supply including a switch for reversing the electric motor. A flexible cover member is provided and a plurality of spaced part rib members and stretchers are provided for supporting the cover member.

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#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0006] The following detailed description of preferred embodiments of the invention, will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, there is shown in the drawings embodiments which are presently preferred. It should be understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown.

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[0007] In the drawings:

[0008] Fig. 1 is a perspective view of a combination umbrella and fan in accordance with a preferred embodiment of the present invention; and

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[0009] Fig. 2 is a sectional view of the combination umbrella and fan taken along line 2-2 of Fig. 1.

#### DETAILED DESCRIPTION OF THE INVENTION

[0010] Fig. 1 illustrates a preferred embodiment of a combination fan and umbrella 10 in accordance with the present invention. The umbrella 10, like any other umbrella, includes a centrally located support rod 12 which is preferably formed of a lightweight high strength material such as wood, steel, aluminum, some other metal, or metal alloy, a polymeric material or the like. Preferably the support rod 12 is generally cylindrical, but it could be of some other cross-section if desired. The lower or proximal end of the support rod 12 includes a handle 14 which preferably is of a size convenient to facilitate holding of the umbrella 10 in the usual manner. The handle 14 may be made of wood, metal, a polymeric material, or any other suitable material and may be covered

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with some other material such as leather, vinyl or the like to provide for a more convenient gripping surface. The handle 14 may be straight or may curve in a manner well known to those in the umbrella art.

5 [0011] The upper or distal end of the support rod 12 is secured to a generally cylindrically shaped fan housing 16. The fan housing 16 is preferably made of a lightweight high strength material such as aluminum or a polymeric material. The lower axial end of the fan housing 16 includes a generally circular cover plate 18 which includes a plurality of generally elongated open slots 20 extending therethrough. An electrically powered fan 22 is located within the fan housing 16. The electrically powered fan 22 includes a small sized, sub-horsepower electric motor 24  
10 having an output shaft which is secured to a rotating propeller 28 which includes two or more spaced apart blades. At least one and preferably two battery housings 30 are secured on opposite sides of the outside of the fan housing 16. The battery housings 30 are provided for receiving and holding one or more batteries which are adapted to provide power to the electrically powered fan 22. Suitable electrical wiring (not shown) extends between the battery housings 30 and the fan motor  
15 24. Preferably, switch 34 is also provided to permit control of the direction of rotation of the electrically powered fan 22 by changing the polarity of the electrical power supplied to the fan motor 24.

[0012] The upper end of the fan housing 16 includes a plurality of generally circular openings 36 at spaced locations around the circumferential surface of the fan housing 16. The openings 36  
20 are provided to permit an unimpeded flow of air into or out of the fan housing 16 when the electrically powered fan 22 is operating. When the switch 34 is in a first position, the fan motor 24 rotates the propeller 28 in a first direction to cause cooling air to flow in through the circular openings 36 and downwardly through the fan housing 16 and out of the slots 20 to impinge upon a user of the umbrella. When the switch 34 is in a second position, the fan motor 24 rotates the  
25 propeller 28 in the opposite direction thereby drawing warm, stale air from beneath the upper portion of the umbrella in through the slots 20, through the fan housing 16 and out of the circular openings 36.

[0013] The upper axial end of the fan housing 16 is covered by a generally rectangularly shaped solar cell housing 38 which is made of a lightweight, high strength material. The upper portion of  
30 the solar cell housing 38 includes a plurality of solar cells 40 of the voltaic type which are well known in the art. The solar cells 40 are covered by a transparent cover which is secured to the solar cell housing 38 by one or more attachment members such as screws, bolts or the like. The solar

cells 40 are electrically connected to the battery housings 30. In this manner, when the solar cells 40 are exposed to sufficient sunlight or other light, electrical energy is generated by the solar cells 40 for recharging the batteries within the battery housings 30. Alternatively, the solar cells 40 may be connected directly to the motor 24 of the electrically powered fan 22. In this manner, when the solar cells 40 are exposed to sufficient sunlight or other light, the electrical energy generated by the solar cells 40 provides power to the motor 24 for operation of the electrically powered fan 22. In this manner, power is supplied to the electric motor 24 by a power supply comprising the batteries and solar cells 40 in combination with suitable wiring and the switch 34. As best shown in Fig. 2, the solar cell housing 38 extends at least slightly beyond the fan housing 16 and the battery housings 30 to provide some protection against the elements for the fan housing 16 and battery housings 30. A cylindrical peg member 42 is secured to the upper surface of the solar cell housing 38 to permit the umbrella 10 to be maintained in an upright condition, for example in an umbrella stand.

[0014] The umbrella 10 further includes a plurality of rib members 44 which are pivotally secured at circumferentially spaced locations around the lower end of the fan housing 16. A similar plurality of stretchers 46 each have one end pivotally secured to one of the rib members 44 at a location which is slightly spaced from the distal end of the rib members 44. The other end of each of each of the stretchers 46 is pivotally secured to a generally cylindrical collar member 48 which surrounds the support rod 12. The collar member 48 may be slid upwardly and downwardly along the support rod 12. Moving the collar member 48 upwardly along the support rod causes the stretchers 46 to extend outwardly to thereby cause the rib members 44 to extend outwardly to open the umbrella 10 in the usual manner as shown in Fig. 2. Similarly, movement of the collar member 48 downwardly, causes these stretchers 46 to move inwardly toward the support rod 12 and to correspondingly move the rib members 44 inwardly toward the support rod 12 to collapse and close the umbrella 10. The rib members 44 support the protective surface or cover member 50 of the umbrella 10. The cover member 50 is preferably made of a flexible material such as a fabric, a polymeric material or the like, and preferably is water repellant. As with any other umbrella, a suitable catch member (not shown) is provided near the upper end of the support rod 12 for capturing and holding the collar member 40 in its upper position to thereby hold the umbrella 10 in its open condition.

[0015] A switch 54 is provided at the lower end of the support rod 12 proximate to the handle 14. The switch 54 is employed for activating the electrically powered fan 22. If there is an adequate amount of sun shining or other light falling on the solar cells 40 the fan motor 24 will cause the shaft

to rotate, thereby rotating the propeller 28. When the switch 34 is in the first position, the rotating propeller 28 draws cooling air into the fan housing 16 through the openings 36 and causes the cooling air to flow downwardly through the slots 20 and onto or near the head of a user holding the umbrella 10. When the switch 34 is in the second position, warm air from beneath the umbrella is  
5 drawn into the slots 20 and is exhausted out of the circular openings 36. If there is insufficient power provided by the solar cells 40. Power for the motor 24 may be provided by the batteries.

[0016] It will be appreciated by those skilled in the art that changes could be made to the embodiments described above without departing from the broad inventive concept thereof. It is understood, therefore, that this invention is not limited to the particular embodiments disclosed, but  
10 it is intended to cover modifications within the spirit and scope of the present invention.